EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
CALIFORNIA BUILDING STANDARDS COMMISSION (CBSC)

REGARDING ADOPTION OF AMENDMENTS TO THE 2007 CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), PARTS 2, 3, 4, 5 and 6 in TITLE 24, CCR, PART 11, CALIFORNIA GREEN BUILDING STANDARDS CODE

LEGEND FOR EXPRESS TERMS
1. New California language and modified language is underlined.
2. Repealed text: All such language appears in ~~strikeout~~.

The California Building Standards Commission (CBSC) proposes to adopt the 2007 edition of the California Green Building Standards Code (CGBC) as shown on the following pages. Adopt new text as follows:

EXPRESS TERMS

PREFACE

This document is Part 11 of the official compilation and publication of the adoptions, amendments and repeal of regulations to California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This Part is known as the California Green Building Standards Code.

The California Legislature delegated authority to various State agencies, boards, commissions and departments to create building regulations to implement the state's statutes. These building regulations have the same force of law and take effect 180 days after their publication unless otherwise stipulated. The California Building Standards Code applies to all occupancies in the State of California as annotated.

A city, county or city and county may make necessary changes to the provisions contained in this code which are reasonably necessary because of local climatic, geological, or topographical conditions. Findings of the local condition(s) and the adopted local building standard(s) must be filed with the California Building Standards Commission to become effective and may not be effective sooner than the effective date of this edition of the California Building Standards Code. Building standards that were adopted by local ordinance and applicable to previous editions of the California Building Standards Code do not apply to this edition without appropriate adoption and the required filing.

EFFECTIVE USE OF THIS CODE

This format of this code is common to other parts of the California Building Standards Code and contains building standards applicable to occupancies which fall under the authority of different state agencies. Occupancies and applications under the authority of a specific state agency are identified in Chapter 1, Sections 103 through 106. Sections of this code which are applicable and adopted by each state agency are identified in the Application Checklist for each state agency contained in Chapter 11. The following outline may be helpful as a guide to establish which provisions are applicable to a specific occupancy.

1. Establish the type of occupancy.
2. Verify which state agency has authority for the established occupancy by reviewing the authorities list in Sections 103 through 106.
3. Once the appropriate agency has been identified, find the application checklist for that agency in Chapter 11.
4. The application checklist will list the green building measures adopted, provide the effective date and other information regarding each green building measure applicable to the established occupancy.
5. Each green building measure listed in the application checklist has a section number which correlates with a section number in Chapters 4 through 8.
6. More information is available for each green building measure listed in the application checklist in the correlated sections contained in Chapters 4 through 8.

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CHAPTER 1

ADMINISTRATION

SECTION 101
GENERAL

101.1 Title. These regulations shall be known as the California Green Building Standards Code and may be cited as such and will be referred to herein as "this code." The California Green Building Standards Code is Part 11 of twelve parts of the official compilation and publication of the adoption, amendment and repeal of building regulations to the California Code of Regulations, Title 24, also referred to as the California Building Standards Code.

101.2 Purpose. The purpose of this code is to improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories:

1. Planning and design.
2. Energy efficiency.
3. Water efficiency and conservation.
4. Material conservation and resource efficiency.
5. Environmental air quality.

101.3 Scope. The provisions of this code shall apply to the construction, replacement, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State of California.

101.3.1 State-regulated buildings, structures and applications. Provisions of this code shall apply to the following buildings, structures, and applications regulated by state agencies as referenced in the Matrix Adoption Tables and as specified in Sections 103 through 106, except where modified by local ordinance pursuant to Section 101.7. When adopted by a state agency, the provisions of this code shall be enforced by the appropriate enforcing agency, but only to the extent of authority granted to such agency by the State Legislature.

1. State-owned buildings, including buildings constructed by the Trustees of the California State University, and to the extent permitted by California laws, buildings designed and constructed by the Regents of the University of California and regulated by the Building Standards Commission. See Section 103 for additional scoping provisions.
2. Energy efficiency standards regulated by the California Energy Commission
3. Low-rise residential buildings constructed throughout the State of California, including but not limited to, hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with common toilets or cooking facilities. See Section 104 for additional scoping provisions.
4. Permanent buildings and permanent accessory buildings or structures constructed within mobilehome parks and special occupancy parks regulated by the Department of Housing and Community Development. See Section 104 for additional scoping provisions.
5. Public elementary and secondary schools, community college buildings and state-owned or state-leased essential service buildings regulated by the Division of the State Architect. See Section 105 for additional scoping provisions.
6. Qualified historical buildings and structures and their associated sites regulated by the State Historical Building Safety Board within the Division of the State Architect.
7. General acute care hospitals, acute psychiatric hospitals, skilled nursing and/or intermediate care facilities, clinics licensed by the Department of Public Health and correctional treatment centers regulated by the Office of Statewide Health Planning and Development. See Section 116 for additional scoping provisions.
8. Graywater systems regulated by the Department of Water Resources.

101.4 Appendices. Provisions contained in the appendices of this code shall not apply unless specifically adopted by a state agency or adopted by a local enforcing agency in compliance with Health and Safety Code Section 18938 (b) for Building Standards Law, Health and Safety Code Section 17950 for State Housing Law and Health and Safety Code Section 13869.7 for Fire Protection Districts. See Section 101.7 of this code.

101.5 Referenced codes and standards. The codes and standards referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

101.5.1 Building. The provisions of the California Building Code shall apply to the construction, alteration, movement, enlargement, replacement, repair, use and occupancy, location, maintenance, removal and demolition of every structure or any appurtenances connected or attached to such buildings or structures.

101.5.2 Electrical. The provisions of the California Electrical Code shall apply to the installation of electrical systems, including but not limited to, alterations, repair, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

101.5.3 Mechanical. The provisions of the California Mechanical Code shall apply to the installation, alterations, repair and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

101.5.4 Plumbing. The provisions of the California Plumbing Code shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances where connected to a water or sewage system.

101.5.5 Fire prevention. The provisions of CCR, Title 19, Division 1 and CCR, Title 24, Part 2 and Part 9 relating to fire and panic safety as adopted by the Office of the State Fire Marshal shall apply to all structures, processes and premises for protection from the hazard of fire, panic and explosion.

101.5.6 Energy. The provisions of the California Energy Code shall apply to the minimum design and construction of buildings for energy efficiency.

101.6 Order of precedence and use.

101.6.1 Differences. In the event of any differences between these building standards and the standard reference documents, the text of these building standards shall govern.

101.6.2 Specific provision. Where a specific provision varies from a general provision, the specific provision shall apply.

101.6.3 Conflicts. When the requirements of this code conflict with the requirements of any other part of the California Building Standards Code, Title 24, the most restrictive requirement shall prevail.

101.7 City, county, or city and county amendments, additions or deletions. This code does not limit the authority of city, county, or city and county governments to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1. The effective date of amendments, additions, or deletions to this code of cities, counties, or city and counties filed pursuant to Section 101.8.1 shall be the date on which it is filed with CBSC. However, in no case shall the amendments, additions or deletions to this code be effective any sooner than the effective date of this code.

Local modifications shall comply with Health and Safety Code Section 18941.5 (b) for Building Standards Law, Health and Safety Code Section 17958.5 for State Housing Law, or Health and Safety Code Section 13869.7 for Fire Protection Districts.

101.7.1 Findings and filings.

1. The city, county, or city and county shall make express findings for each amendment, addition or deletion based upon climatic, topographical, or geological conditions.
2. The city, county, or city and county shall file the amendments, additions, or deletions expressly marked and identified as to the applicable findings. Cities, counties, cities and counties, and fire departments shall file the amendments, additions or deletions and the findings with the California Building Standards Commission at 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833.
3. Findings prepared by fire protection districts shall be ratified by the local city, county, or city and county and filed with the California Department of Housing and Community Development at 1800 3rd Street, Room 260, Sacramento, CA 95811.

101.8 Alternate materials, designs and methods of construction. The provisions of this code as adopted by the Department of Housing and Community Development are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code. Consideration and approval of alternates shall comply with Section 108.7.2 of the California Building Code.

101.9 Effective date of this code. Only those standards approved by the California Building Standards Commission that are effective at the time an application for a building permit is submitted shall apply to the plans and specifications for, and to the construction performed under, that permit. For the effective dates of the provisions contained in this code, see the appropriate application checklist in Chapter 11 of this code and the History Note page of this code.

101.10 Mandatory requirements. This code contains both optional and mandatory green building measures. Mandatory and optional measures are identified in the appropriate application checklist contained in Chapter 11 of this code.

101.11 Effective use of this code. The following steps shall be used to establish which provisions of this code are applicable to a specific occupancy:

1. Establish the type of occupancy.
2. Verify which state agency has authority for the established occupancy by reviewing the authorities list Sections 103 through 106.
3. Once the appropriate agency has been identified, find the application checklist for that agency in Chapter 11.
4. The application checklist will list the green building measures adopted, provide the effective date and other information regarding each green building measure applicable to the established occupancy.
5. Each green building measure listed in the application checklist has a section number which correlates with a section number in Chapters 4 through 8.
6. More information is available for each green building measure listed in the application checklist in the correlated sections contained in Chapters 4 through 8.

SECTION 102
CONSTRUCTION DOCUMENTS AND INSTALLATION VERIFICATION

102.1 Submittal documents. Construction documents and other data shall be submitted in one or more sets with each application for a permit. Where special conditions exist, the enforcing agency is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The enforcing agency is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional.

102.2 Information on construction documents. Construction documents shall be of sufficient clarity to indicate the location, nature and scope of the proposed green building feature and show that it will conform to the provisions of this code, the California Building Standards Code and other relevant laws, ordinances, rules and regulations as determined by the enforcing agency.

102.3 Verification. Documentation of conformance for applicable green building measures shall be provided to the enforcing agency. Third-party verification or other special documentation shall be provided as specified in the green building categories contained in Chapter 4 through 8 of this code. Alternate methods of documentation shall be acceptable when the enforcing agency finds that the proposed alternate documentation is satisfactory to demonstrate substantial conformance with the intent of the proposed green building feature.

SECTION 103
BUILDING STANDARDS COMMISSION

103.1 Specific scope of application of the agency responsible for enforcement, the enforcement agency, and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.

1. All occupancies.
Application – State buildings (all occupancies), including buildings constructed by the Trustees of the California State University and the Regents of the University of California and all occupancies where no state agency has the authority to adopt building standards applicable to such buildings.
Enforcing Agency – State or local agency specified by the applicable provisions of law.
Authority Cited – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

2. University of California, California State Universities, and California Community Colleges.
Application – Standards for lighting for parking lots and primary campus walkways at the University of California, California State Universities, and California Community Colleges.
Enforcing Agency – State or local agency specified by the applicable provisions of law.
Authority Cited – Government Code Section 14617.
Reference – Government Code Section 14617.

3. Existing State-Owned Buildings, including those owned by the University of California and by the California State University.
Application – Building seismic retrofit standards including abating falling hazards of structural and nonstructural components and strengthening of building structures. See also Division of the State Architect.
Enforcing Agency – State or local agency specified by the applicable provisions of law.
Authority Cited – Government Code Section 16600.

Reference – Government Code Sections 16600 through 16604.

4. Unreinforced Masonry Bearing Wall Buildings.

Application – Minimum seismic strengthening standards for buildings specified in Appendix Chapter 1 of the California Code for Building Conservation, except for buildings subject to building standards adopted pursuant to Part 1.5 (commencing with Section 17910).

Enforcing Agency – State or local agency specified by the applicable provisions of law.

Authority Cited – Health and Safety Code Section 18934.6.

Reference – Health and Safety Code Sections 18901 through 18949.

CHAPTER 2

DEFINITIONS

SECTION 201

GENERAL

201.1 Scope. Unless otherwise stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3 Terms defined in other documents. Where terms are not defined in this code and are defined in the California Building Standards Code or other referenced documents, such terms shall have the meanings ascribed to them as in those publications.

201.4 Terms not defined. Where terms are not defined as specified in this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION 202

DEFINITIONS

AUTOMATIC. Automatic means capable of operating without human intervention.

BATHROOM. A bathroom is a room containing a shower, tub, toilet or a sink that is used for personal hygiene.

BUILDING ENVELOPE. The ensemble of exterior and demising partitions of a building that enclose conditioned space.

CALIFORNIA BUILDING CODE. The current version of the California Building Code.

CALIFORNIA ELECTRICAL CODE. The current version of the California Electrical Code.

CALIFORNIA ENERGY CODE. The current version of the California Energy Code.

CALIFORNIA MECHANICAL CODE. The current version of the California Mechanical Code.

CALIFORNIA PLUMBING CODE. The current version of the California Plumbing Code.

CONDITIONED SPACE. A space in a building that is either directly conditioned or indirectly conditioned.

COOLING EQUIPMENT. Equipment used to provide mechanical cooling for a room or rooms in a building.

ENERGY COMMISSION. The California State Energy Resources Conservation and Development Commission.

ENFORCING AGENCY. The designated department or agency as specified by statute or regulation.

GREEN BUILDING. A structure that uses a holistic approach to design, construction, and demolition that minimizes the building's impact on the environment, the occupants, and the community, and that includes measures to reduce impacts including but not limited to the following areas: site planning, energy efficiency, water efficiency, materials and resource efficiency, and environmental quality.

INFILTRATION. An uncontrolled inward air leakage from outside a building or unconditioned space, including leakage through cracks and interstices, around windows and doors and through any other exterior or demising partition or pipe or duct penetration.

KITCHEN. That portion in a residential dwelling unit that is a room or area used for cooking, food storage and preparation and washing dishes, including associated counter tops and cabinets, refrigerator, stove, ovens and floor area.

LOW-RISE RESIDENTIAL BUILDING. A building, other than a hotel/motel, that is of Occupancy Group R, Division 1,

and is three stories or less, or that is of Occupancy Group R, Division 3.

OUTDOOR AIR (Outside air). Air taken from outdoors and not previously circulated in the building.

RESIDENTIAL BUILDING. (See "low-rise residential building.")

VAPOR BARRIER. Material that has a permeance of one perm or less and that provides resistance to the transmission of water vapor.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 3

GREEN BUILDING

SECTION 301
GENERAL

301.1 Scope. Buildings shall be designed to include the green building measures specified as mandatory in the application worksheets contained in Chapter 11 of this code. Optional green building measures may be included but are not required.

SECTION 302
MIXED OCCUPANCY BUILDINGS

302.1 Mixed occupancy buildings. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 4

PLANNING AND DESIGN

SECTION 401
GENERAL

401.1 Purpose. The provisions of this chapter outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore, and enhance the environmental quality of the site and respect the integrity of adjacent properties.

SECTION 402
DEFINITIONS

402.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ALBEDO. Synonymous with solar reflectance, which is a ratio of the energy reflected back into the atmosphere to the energy absorbed by the surface, with 100% being total reflectance.

BIORETENTION. A shallow depression that utilizes conditioned soil and vegetation for the storage, treatment, or infiltration of storm water runoff.

BROWNFIELD SITE. Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant, with certain legal exclusions and additions. See the full text at EPA's web site at: http://www.epa.gov/brownfields/glossary.htm.

DEVELOPMENT FOOTPRINT. The total area of the building footprint, hardscape, access roads, and parking.

GREENFIELDS. Sites that are not previously developed or graded and remain in a natural state able to support agriculture, open space, or habitat. Previously developed sites are those that previously contained buildings, roadways, parking lots, or were graded or altered by direct human activities.

GREYFIELD SITE. Any site previously developed with at least 50% of the surface area covered with impervious material.

INFILL AREAS. Vacant or underutilized lots of land, served by existing physical installations such as roads, power lines, sewer and water, and other infrastructure.

NATIVE/ADAPTED PLANTS. Plants indigenous to a locality or cultivars of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds.

SECTION 403
SITE SELECTION

403.1 Site selection. Consistent with the local general plan, avoid development of buildings, hardscape, roads or parking areas on sites that qualify as any of the following.

1. Prime farmland defined as important by the United States Department of Agriculture.
2. Elevation lower than 5 ft above the elevation of the 100-yr flood as mapped by the Federal Emergency Management Agency for Region IX.
3. Habitat of federal or state threatened or endangered species, or wildlife corridor as mapped by federal or California game and fish agencies or locally.

   Exception: A site justified by a survey conducted by a certified biologist or botanist.

4. Within 100 ft of any wetland as defined in 40 CFR 230-233 or local agency, whichever is more stringent.

   Exception: A site justified by a survey conducted by a certified wetlands biologist.

5. Public parkland (unless replaced) as determined by records of ownership and/or land transfer.

Document avoidance in planning documents or vicinity maps and site plans.

403.2 Development density and community connectivity. ~~Select for development areas~~ Develop sites with existing infrastructure in accordance with either Section 403.2.1 or 403.2.2.

Exception: Areas described in Section 403.1.

403.2.1 Development density. Conform to existing or desired density goals by developing sites that are located within an existing minimum development density of 60,000 square feet per acre, equivalent to two-story downtown

development.

403.2.2 Community connectivity. Locate project on a previously developed site within a 1/2 mile radius of at least ten basic services, readily accessible by pedestrians, including, but not limited, to one each of bank, place of worship, convenience grocery, day care, cleaners, fire station, barber shop, beauty shop, hardware store, laundry, library, medical clinic, dental clinic, senior care facility, park, pharmacy, post office, restaurant (two may be counted), school, supermarket, theater, community center, fitness center, museum, or farmers market. Other services may be considered on a case-by-case basis.

403.3 Public transportation access. Locate project within 1/2 mile of an existing, or planned and funded, commuter rail, light rail, or subway station or within 1/4 mile of at least two bus lines.

403.4 Brownfield or greyfield site redevelopment or infill area development. Select for development a brownfield in accordance with Section 403.4.1 or on a greyfield or infill site as defined in Section 402.

403.4.1 Brownfield redevelopment. Develop a site documented as contaminated by means of an ASTM E1903-97 Phase II Environmental Site Assessment or on a site defined as a brownfield by a local, state or federal government agency.

403.5 Documentation. Document on radius maps with information about project site and surroundings from the local planning or zoning department.

SECTION 404
SITE PRESERVATION

404.1 Storm water pollution prevention plan. For projects of one acre or less, develop a Storm Water Pollution Prevention Plan (SWPPP) that has been designed, specific to its site, conforming to the State Storm water NPDES Construction Permit or local ordinance, whichever is stricter, as is required for projects over one acre. The plan should cover prevention of soil loss by storm water run-off and/or wind erosion, of sedimentation, and/or of dust/particulate matter air pollution and meet the following objectives:

1. Prevent loss of soil during construction by storm water runoff and/or wind erosion, including protective topsoil by stockpiling for reuse.
2. Prevent sedimentation of storm sewer or receiving streams.
3. Prevent polluting the air with dust and particulate matter.
4. Control erosion to reduce negative impacts on water and air quality.

The contractor is required to prepare the SWPPP by the project contract documents. Assistance with the permit may be obtained from the California State Water Resources Control Board (SWRCB) at: http://www.swrcb.ca.gov/stormwtr/ , from a Regional Water Quality Control Board, and at local public works departments.

404.2 Plan to protect or restore habitat. Protect and restore greenfield sites, previously developed sites, and bird populations.

404.2.1 Greenfield sites. On greenfield sites, limit all site disturbance as follows:

1. To within40 feet of the building perimeter.
2. To within 10 feet of surface walkways, patios, surface parking and utilities less than 12 inches in diameter.
3. To within 15 feet of primary roadway curbs and main utility branch trenches.
4. To within 25 feet of constructed areas with permeable surfaces (such as pervious paving areas, storm water detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area.
5. Within the drip line of native or heritage trees identified in a certified arborist's survey.

404.2.1.1 Site survey. Survey existing site features for preservation, and site the building minimizing its footprint and avoiding disruption of existing ecosystems.

404.2.1.2 Restoration of disturbed areas. Restore all areas disturbed during construction by planting with local native/adapted vegetation.

404.2.2 Previously developed sites. On previously developed or graded sites, restore or protect at least 50% of the site area with native or adapted vegetation. Projects sited in accordance with Section 403.2 may apply vegetated roof surface to this calculation if the roof plants meet the definition of native/adapted.

Exception: Area of the building footprint is excluded from the calculation.

404.2.3 Birds. On sites near or adjacent to permanently designated parkland or open space, employ building design strategies to avoid bird collisions, such as breaking up large areas of glass, use of etched glass visible to birds, and exterior features that allow birds to distinguish glass from sky or vegetation.

404.3 Reduce development footprint and optimize open space. Optimize open space on the project site in accordance with Sections 404.3.1, 404.3.2, or 404.3.3.

404.3.1 Local zoning requirement in place. Exceed the zoning's open space requirement for vegetated open

space on the site by 25%.

404.3.2 No local zoning requirement in place. Provide vegetated open space area adjacent to the building equal to the building footprint area.

404.3.3 No open space required in zoning ordinance. Provide vegetated open space equal to 20% of the total project site area.

404.4 Documentation. Provide calculations and dimensions on plans, and illustrate bird protection in building elevations, schedules, and details.

SECTION 405
DECONSTRUCTION AND REUSE OF EXISTING STRUCTURES

405.1 Existing building structure. Maintain at least 75% of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing) based on surface area.

Exceptions:
1. Window assemblies and non-structural roofing material.
2. Hazardous materials that are remediated as a part of the project.
3. A project with an addition of more than 2 times the square footage of the existing building.

405.2 Existing non-structural elements. Reuse existing interior non-structural elements (interior walls, doors, floor coverings and ceiling systems) in at least 50% of the area of the completed building (including additions).

Exception: A project with an addition of more than 2 times the square footage of the existing building.

Salvage additional items in good condition such as light fixtures, plumbing fixtures, and doors for reuse on this project in an onsite storage area or for salvage in dedicated collection bins. Document the weight or number of the items salvaged.

SECTION 406
SITE DEVELOPMENT

406.1 General. Preservation and use of available natural resources shall be accomplished through evaluation and careful planning to minimize negative effects on the site and adjacent areas. Preservation of slopes, management of storm water drainage and erosion controls shall comply with this section.

. . .

406.3 Storm water design. Design storm water runoff rate and quantity in conformance with Section 406.3.1 and storm water runoff quality by Section 406.3.2, or by local requirements, whichever are stricter.

406.3.1 Storm water runoff rate and quantity. Implement a storm water management plan resulting in no net increase in rate and quantity of storm water runoff from existing to developed conditions.

Exception: If the site is already greater than 50% impervious, implement a storm water management plan resulting in a 25% decrease in rate and quantity.

406.3.2 Storm water runoff quality. Use post construction treatment control best management practices to mitigate (infiltrate, filter, or treat) storm water runoff from the 85th percentile 24-hour runoff event (for volume-based BMPs) or the runoff produced by a rain event equal to two times the 85th percentile hourly intensity (for flow-based BMPs).

406.3.3 Parking lots. Use depressed planter areas and curb cuts to allow for drainage into the planter areas or utilize other specified bioretention techniques.

406.4 Bicycle storage and changing rooms. Provide secure racks or storage for bicycles equivalent to 10% or more of parking capacity, with 3% or more being long-term storage. Provide changing/shower facilities, or document arrangements with nearby changing/shower facilities.

406.5 Fuel Efficient Vehicles. Purchasing policy and refueling sites for low emitting vehicles for state employees use can be found at: http://www.ofa.dgs.ca.gov/NR/exeres/BEAD98C9-035D-4229-8C90-3D47BD5D81FF.htm , Management Memo MM 06-03.

406.5.1 Preferred parking. Provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site.

406.5.2 Electric vehicle charging. Provides facilities meeting Section 406.7 of the California Building Code as follows:

406.5.2.1 1-50 parking spaces. For 1-50 parking spaces, including individual floors of parking garages, provide one conductive, 120 VAC 20 Amp, grounded AC outlet or panel capacity and conduit installed for future outlet.

406.5.2.2 51-200 parking spaces. For 51-200 parking spaces, including individual floors of parking garages, provide two conductive, 120 VAC 20 Amp, grounded AC outlets or panel capacity and conduit installed for future outlets.

406.5.2.3 201-or more parking spaces. For 201 or more parking spaces, including individual floors of parking garages, provide four conductive, 120 VAC 20 Amp, grounded AC outlets or panel capacity and conduit installed for future outlets.

406.6 Parking capacity. Design parking capacity to meet but not exceed minimum local zoning requirements, and provide preferred parking for carpools/vanpools to serve 5% of total parking capacity.

406.6.1 Reduce parking capacity. With the approval of the enforcement authority, employ strategies to reduce on site parking area by

1. Use of on street parking or compact spaces, illustrated on the site plan, or
2. Implementation and documentation of programs that encourage occupants to carpool, ride share, or use alternate transportation. Strategies for programs may be obtained from local community Transit Management Associations (TMAs).

406.7 Heat island effect. Reduce non-roof heat islands by Section 406.7.1, roof heat islands by 406.7.2, and walls and ground-level air conditioner condensing units by Section 406.7.3.

406.7.1 Hardscape alternatives. Use one or a combination of strategies 1 through 3 for 50% of site hardscape or put 50% of parking underground.

1. Provide shade (mature within 5 years of occupancy).
2. Use light colored/ high-albedo materials
3. Use open-grid pavement system.

406.7.2 Roof area alternatives. Meet one of the following criteria:

1. Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than the values below for a minimum of 75% of the roof surface and meeting the requirements of the 2007 California Energy Code, Section 118:
   For roofs with slopes less than or equal to 2:12, SRI of 65 (aged).
   For roofs with slopes greater than 2:12, SRI of 25 (aged).
2. Install a vegetated roof for at least 50% of the roof area.
3. Install a combination of highly reflective and vegetated roof to cover collectively 75% of the roof area.

406.7.3 Exterior walls and air conditioner condensing units. Select one of the following for wall surfaces, and shade the horizontal surfaces of air conditioner condensing units as follows:

1. Provide vegetative or man-made shading devices for east-, south-, and west-facing walls.
2. Use wall surfacing with SRI 25 (aged), for 75% of opaque wall areas.
3. Shade 75% of the horizontal surface of air conditioner condensing units without impeding air flow.

If not available from the manufacturer, aged SRI value calculations may be found at the California Energy Commission's web site at www.energy.ca.gov .

406.8 Light pollution reduction. Comply with lighting power requirements in the 2007 California Energy Code and design interior and exterior lighting such that zero direct-beam illumination leaves the building site. Meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the 2007 California Administrative Code and as recommended by the Illuminating Engineering Society of North America (IESNA) *Recommended Practice Manual: Lighting for Exterior Environments* (RP-33-99) using the following strategies:

1. Shield all exterior luminaries.
2. Contain interior lighting within each source.
3. Contain all exterior lighting within property boundaries.

Exception: See Part 2, Chapter 12, Section 1205.6 for campus lighting requirements for parking facilities and walkways.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b) and Government Code Section 14617.
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901, and Government Code Section 14617.

CHAPTER 5

ENERGY EFFICIENCY

SECTION 501
GENERAL

501.1 Scope. The provisions of this chapter shall outline means of achieving optimum building energy efficiency.

SECTION 502
DEFINITIONS

502.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

BUILDING COMMISSIONING. A systematic quality assurance process that spans the entire design and construction process. Building commissioning helps ensure that a new building's performance meets owner expectations by verifying and documenting that building systems and components are planned, designed, installed, tested, operated, and maintained to meet the owner's project requirements.

ENERGY STAR. A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy. ENERGY STAR is a voluntary labeling program designed to identify and promote energy-efficient products to reduce greenhouse gas emissions.

DEMAND RESPONSE AUTOMATION INTERNET SOFTWARE CLIENT. Software that resides in a building Energy Management Control System that can receive a demand response signal and automatically reduce HVAC and lighting system loads. Demand Response programs developed by Utilities and ISO's depend upon timely and reliable communications of events and information to the buildings that are participating in the programs.

GEOTHERMAL. Renewable energy generated by deep-earth water or steam.

PROCESS. An activity or treatment that is not related to the space conditioning , lighting, service water heating, or ventilating of a building as it relates to human occupancy.

SECTION 503
PERFORMANCE MEASURES

503.1 Energy performance. Using an Alternative Calculation Method approved by the California Energy Commission, calculate each building's energy costs and CO_2 emissions, and compare it to the standard or "budget" building.

503.1.1 Tier 1. Exceed 2007 California Energy Code requirements by 15%.

503.1.2 Tier 2. Exceed 2007 California Energy Code requirements by 30%.

Document the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Nonresidential Alternative Calculation Method Manual.

SECTION 504
PRESCRIPTIVE MEASURES

504.1 ENERGY STAR equipment and appliances. All equipment and appliances provided by the builder shall be ENERGY STAR labeled if ENERGY STAR is applicable to that equipment or appliance.

504.2 Energy monitoring. Provide sub-metering or equivalent combinations of sensor measurements and thermodynamic calculations, if appropriate, to record energy use data for each major energy system in the building, including chillers, heat pumps, packaged AC systems, fans, pumps, cooling towers, boilers and other heating systems, lighting systems, and process loads.

504.2.1 Data storage. The data management system must be capable of electronically storing energy data and creating user reports showing hourly, daily, monthly and annual energy consumption for each major energy system.

504.2.2 Data access. Hourly energy use data shall be accessible through a central data management system and must be available daily.

504.3 Demand response. HVAC systems with Direct Digital Control Systems and centralized lighting systems shall include pre-programmed demand response strategies that are automated with either a Demand Response Automation Internet Software Client or dry contact relays.

504.3.1 HVAC. The pre-programmed demand response strategies should be capable of reducing the peak HVAC demand by cooling temperature set point adjustment.

504.3.2 Lighting. The pre-programmed demand response strategies should be capable of reducing the total

lighting load by a minimum 30% through dimming control or bi-level switching.

504.3.3 Software clients. The software clients will be capable of communicating with a DR Automation Server.

504.4 Commissioning. Building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's project requirements. Commissioning shall be performed in accordance with this section using generally accepted industry standards. Commissioning requirements shall include as a minimum:

1. Owner's Project Requirements.
2. Basis of Design.
3. Commissioning measures shown in the construction documents.
4. Commissioning Plan
5. Functional Performance Testing.
6. Post Construction Documentation & Training.
7. Commissioning Report.

All building systems and components covered by Title 24, Part 6, as well as process equipment and controls, and renewable energy systems shall be included in the scope of the Commissioning Requirements.

504.4.1 Owner's Project Requirements (OPR). The expectations and requirements of the building shall be documented before the design phase of the project begins. At a minimum, this documentation shall include the following:

1. Environmental and Sustainability Goals.
2. Energy Efficiency Goals.
3. Indoor Environmental Quality Requirements.
4. Equipment and Systems Expectations.
5. Building Occupant and O&M Personnel Expectations.

504.4.2 Basis of Design (BOD). A written explanation of how the design of the building systems meets the Owner's Project Requirements shall be completed at the design phase of the building project, and updated as necessary during the design and construction phases. At a minimum, the Basis of Design document shall cover the following systems:

1. Heating, Ventilation, Air Conditioning (HVAC) Systems and Controls.
2. Indoor Lighting System and Controls.
3. Water Heating System.
4. Renewable Energy Systems.

504.4.3 Commissioning plan. A commissioning plan shall be completed to document the approach to how the project will be commissioned and shall be started during the design phase of the building project. The Commissioning Plan shall include the following at a minimum:

1. General Project Information.
2. Commissioning Goals.
3. Systems to be commissioned**.** Plans to test systems and components shall include at a minimum:
   a. A detailed explanation of the original design intent,
   b. Equipment and systems to be tested, including the extent of tests,
   c. Functions to be tested,
   d. Conditions under which the test shall be performed,
   e. Measurable criteria for acceptable performance.
4. Commissioning Team Information.
5. Commissioning Process Activities, Schedules & Responsibilities – plans for the completion of Commissioning Requirements listed in 504.4.4 through 504.4.6 shall be included.

504.4.4 Functional performance testing. Functional performance tests shall demonstrate the correct installation and operation of each component, system, and system-to-system interface in accordance with the approved plans and specifications.

504.4.5 Post construction documentation and training. A Systems Manual and Systems Operations Training are required.

504.4.5.1 Systems manual. Documentation of the operational aspects of the building shall be completed within the Systems Manual and delivered to the building owner and facilities operator. At a minimum, the Systems Manual shall include the following:

1. Site Information, including facility description, history and current requirements.
2. Site Contact Information.
3. Basic Operations & Maintenance, including general site operating procedures, basic troubleshooting, recommended maintenance requirements, site events log
4. Major Systems.
5. Site Equipment Inventory and Maintenance Notes.
6. Other Resources & Documentation.

504.4.5.2 Systems operations training. The training of the appropriate maintenance staff for each

equipment type and/or system shall include, as a minimum, the following:

1. System/Equipment overview (what it is, what it does and what other systems and/or equipment it interfaces with).
2. Review of the information in the Systems Manual.
3. Review of the record drawings on the system/equipment.

504.4.6 Commissioning report. A complete report of commissioning process activities undertaken through the design, construction and post-construction phases of the building project shall be completed and provided to the owner.

504.5 Building orientation and shading. Locate, orient and shade the building as follows:

1. When site and location permit, orient the building with the long sides facing north and south.
2. Provide total exterior shade for south-facing windows during summer solstice.
3. Provide vertical shading for east- and west-facing windows during the early and later periods of the day, respectively.
4. Protect the building from thermal loss, drafts, and degradation of the building envelope caused by wind and wind-driven materials such as dust, sand, snow, and leaves with building orientation and landscape features.

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SECTION 511
RENEWABLE ENERGY

511.1 On-site renewable energy. Use on-site renewable energy sources such as solar, wind, geothermal, low-impact hydro, biomass and bio-gas for at least 1% of the electrical service load calculated in accordance with the 2007 California Electrical Code.

511.1.1 Documentation. Calculate renewable on-site energy cost savings as a percentage of estimated local utility rates for conventional fuel types.

511.1.2 Net metering. Factor in net-metering, if offered by local utility, on an annual basis.

511.2 Green Power. Participate in the local utility's renewable energy portfolio program that provides a minimum of 50% electrical power from renewable sources. Maintain documentation through utility billings.

SECTION 512
ELEVATORS, ESCALATORS, AND OTHER EQUIPMENT

512.1 Elevators and escalators. In buildings with more than one elevator or two escalators, provide controls to reduce the energy demand of elevators for part of the day and escalators to slow or shut down when no traffic is detected. Document the controls in the project specifications and commissioning plan.

512.1.1 Controls. Controls that reduce energy demand shall meet requirements of CCR, Title 8, Chapter 4, Subchapter 6 and shall not interrupt emergency operations for elevators required in CCR, Title 24, Part 2, California Building Code.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 6

WATER EFFICIENCY AND CONSERVATION

SECTION 601
GENERAL

601.1 Scope. The provisions of this chapter shall establish the means of conserving water used indoors, outdoors, and in wastewater conveyance.

SECTION 602
DEFINITIONS

602.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

DENSITY FACTOR [Kd]{dimensionless}. The Coefficient used to modify Ks to reflect the water needs of a particular plant or group of plants with reference to the density of the plant material. Kd ranges from 0.5 for a sparse planting to 1.3 for very dense plantings and averages 1.0. (Landscape, 2000).

EVAPOTRANSPIRATION [ET]. The combination of water transpired from plant tissues and evaporated from the soil and plant surfaces measured in inches per unit of time.

GRAYWATER. Untreated household waste which has not come into contact with toilet waste. Graywater includes used water from bathtubs, showers, bathroom wash basins, and water from clothes washing machines and laundry tubs. It shall not include waste water from kitchen sinks, dishwashers, or laundry water from soiled diapers.

HISTORICAL EVAPOTRANSPIRATION [Historical ETo]. ~~A~~ multiple-year average of recorded historical reference ETo data from a weather station or evaporative pan in a given geographic location. This value is typically a monthly average of the specific month in a given multi-year time frame. This value, when corrected for plant species characteristics, can be used as a baseline to evaluate the expected water needs of a landscape planting in that geographic area.(FAO 1998; ASCE, 1990)

LANDSCAPE (PLANT) COEFFICIENT [Kl]. The product of the species factor multiplied by the density factor and the microclimate factor. {Kl=Ks x Kd X Kmc} The landscape coefficient is used in the landscape water budget calculation. (UCCE, 2000)

MICROCLIMATE FACTOR [Kmc]. The coefficient used to modify Ks to reflect water needs of a particular plant or group of plants with reference to the microclimate of the panting area. Microclimate factors include sun exposure, proximity to reflective surfaces, and windy locations. Kmc ranges from 0.5 for low microclimate factors to 1.4 for high microclimate factors. (UCCE, 2000)

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE. The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2500 square feet meet an irrigation water budget developed based on landscaped area, and climatological parameters.

PLANT SPECIES FACTOR, [Ks]]{dimensionless}. A factor or coefficient used to adjust reference evapotranspiration to reflect water use by a particular plant species. Ks ranges from <0.1 for very low water using plants, 0.1-0.3 for low water using, 0.4-0.6 moderate water using to 0.7-0.9 for high water using plants. The Ks for cool season turfgrass is 0.8 and warm season turfgrass is 0.6.

POTABLE WATER. Water that is drinkable and meets the U. S. Environmental Protection Agency (EPA) Drinking Water Standards. See definition in the California Plumbing Code, Part 5.

RECYCLED WATER. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur (Water Code Section 13050 (n)). Simply put, recycled water is water treated to remove waste matter attaining a quality that is suitable to use the water again.

REFERENCE EVAPOTRANSPIRATION {ETo}. The estimated rate of evapotranspiration from a standardized surface of well watered, actively growing cool season turfgrass clipped to 12 cm with sufficient density to fully shade the soil. The water needs of a landscape planting can be calculated by multiplying the Landscape Coefficient [Kl] and Reference Evapotranspriation {ETo}

SUBMETER. A meter installed subordinate to a site meter. Usually used to measure water intended for one purpose, such as landscape irrigation. AKA Dedicated Meter.

SECTION 603
INDOOR WATER USE

603.1 Meters. Separate meters or submeters shall be installed for indoor and outdoor potable water use.

603.2 20% Savings. A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 20% shall be provided. The reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code. The 20% reduction in potable water use shall be demonstrated by one of the following methods.

TABLE 603.1
WATER USE BASELINE

Fixture Type	Flow-rate[2]	Duration	Daily uses	Occupants[3, 4]
Showerheads	2.5 gpm @ 80 psi	8 min.	1	X
Showerheads Residential	2.5 gpm @ 80 psi	8 min.	1	X
Lavatory Faucets Residential	2.2 gpm @ 60 psi	.25 min.	3	X
Kitchen Faucets	2.2 gpm @ 60 psi	4 min.	1	X
Replacement Aerators	2.2 gpm @ 60 psi			X
Wash Fountains	2.2 (rim space (20 in.)) gpm @ 60 psi			X
Metering Faucets	0.25 gallons/cycle	.25 min.	3	X
Metering Faucets for Wash Fountains	2.2 (rim space (20 in.)) gpm @ 60 psi	.25 min.		X
Gravity tank type Water Closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Flushometer Tank Water Closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Flushometer Valve Water Closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Blowout Water Closets	3.5 gallons/flush	1 flush	1 male[1] 3 female	X
Urinals	1.0 gallons/flush	1 flush	2 male	X

Fixture "Water Use" = Flow rate x Duration x Occupants x Daily uses

[1] Except for low-rise residential occupancies the daily use number shall be increased to three if urinals are not installed in the room.

[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.

[3] For low rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.

[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.

TABLE 603.2
FIXTURE FLOW RATES

Fixture Type	Flow-rate	Maximum flow rate at 20% Reduction
Showerheads	2.5 gpm @ 80 psi	2 gpm @ 80 psi
Lavatory Faucets Residential	2.2 gpm @ 60 psi	1.8 gpm @ 60 psi
Kitchen Faucets	2.2 gpm @ 60 psi	1.8 gpm @ 60 psi
Wash Fountains	2.2 (rim space (20 in.)) gpm @ 60 psi	1.8 (rim space (20 in.)) gpm @ 60 psi
Metering Faucets	0.25 gallons/cycle	0.2 gallons/cycle
Metering Faucets for Wash Fountains	2.2 (rim space (20 in.)) gpm @ 60 psi	1.8 (rim space (20 in.)) gpm @ 60 psi
Gravity tank type Water Closets	1.6 gallons/flush	1.28 gallons/flush
Flushometer Tank Water Closets	1.6 gallons/flush	1.28 gallons/flush
Flushometer Valve Water Closets	1.6 gallons/flush	1.28 gallons/flush
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1.28 gallons/flush
Blowout Water Closets	3.5 gallons/flush	2.8 gallons/flush
Urinals	1.0 gallons/flush	.8 gallons/flush

603.3 Appliances.

1. Clothes washer shall have a maximum Water Factor (WF) that will reduce the use of water by 10% below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the California Code of Regulations.
2. Dishwashers shall meet the following water use standards:
   a. Residential—6.25 gallons per cycle or less
   b. Commercial—refer to Table 603.3

TABLE 603.3
COMMERCIAL DISHWASHER WATER USE

Type	High-Temperature—maximum gallons per rack	Chemical—maximum gallons per rack
Conveyer	0.70	0.62
Door	0.95	1.16
Undercounter	0.90	0.98

3. Ice makers shall be air cooled.
4. Food steamers shall be connection-less or boiler-less.
5. The use and installation of water softeners that discharge to the community sewer system shall be limited or prohibited by local agencies if certain conditions are met.
6. New buildings and facilities shall be dual plumbed for potable and recycled water systems for toilet flushing when recycled water is available as determined by the enforcement authority.

603.4 Wastewater reduction. Each building shall reduce the generation of wastewater by the following methods:

1. The installation of water-conserving fixtures (water closets, urinals) meeting the criteria established in sections 603.2 or 603.3 or utilizing non-potable water systems (captured rainwater, graywater, and on-site or municipally treated wastewater (recycled water)),

2. Treat wastewater on-site to tertiary standards.

SECTION 604
OUTDOOR WATER USE

604.1 Water budget. A water budget shall be developed for landscape irrigation use that conforms to the local water efficient landscape ordinance or to the California Department of Water Resources Model Water Efficient Landscape Ordinance where no local ordinance is applicable.

604.2 Potable water reduction. Provide water efficient landscape irrigation design that reduces by 50% the use of potable water beyond the initial requirements for plant installation and establishment. Calculations for the reduction shall be based on the water budget developed pursuant to section 605.1.

Methods used to accomplish the requirements of this section must be designed to the requirements of the California Building Standards Code and shall include, but not be limited to, the following:

1. Plant coefficient.
2. Irrigation efficiency and Distribution Uniformity.
3. Use of captured rainwater.
4. Use of recycled water.
5. Water treated for irrigation purposes and conveyed by a water district or public entity.

604.3 Potable water elimination. Provide a water efficient landscape irrigation design that eliminates the use of potable water beyond the initial requirements for plant installation and establishment.. Methods used to accomplish the requirements of this section must be designed to the requirements of the California Building Standards Code and shall include, but not be limited to, the following:

1. Plant coefficient.
2. Irrigation efficiency and Distribution Uniformity.
3. Use of captured rainwater.
4. Use of recycled water.
5. Water treated for irrigation purposes and conveyed by a water district or public entity.

604.4 Graywater Irrigation System. Install graywater collection system for onsite subsurface irrigation using graywater collected from showers, lavatory sinks and laundry water. See Appendix G, 2007 California Plumbing Code.

604.5 Rainwater or stormwater collection systems. Either as a site design feature (vegetated swales, etc.), or as a constructed system (rain cistern, etc.), rain cisterns and other constructed water collection devices may store water for landscape irrigation.

SECTION 605
RECYCLED, RECLAIMED, AND GRAYWATER SYSTEMS
(Reserved)

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 7

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION 701
GENERAL

701.1 Scope. The provisions of this chapter shall outline means of achieving material conservation and resource efficiency through reuse of existing building stock and materials; use of recycled, regional, rapidly renewable, and certified wood materials; and employment of techniques to reduce pollution through recycling of materials and reduction of building pollutants prior to occupancy.

SECTION 702
DEFINITIONS

702.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

OVE. Optimal Value Engineering, another term for advanced wood framing techniques.

POST-CONSUMER CONTENT. Waste material generated by consumers after it is used and which would otherwise be discarded.

PRE-CONSUMER (or POST-INDUSTRIAL) CONTENT. Material diverted from the waste stream during one manufacturing process, including scraps, damaged goods, and excess production, that is used in another manufacturing process.

RECYCLED CONTENT. Refer to International Organization of Standards ISO 14021—Environmental labels and declarations—Self-declared environmental claims (Type II environmental labeling).

RECYCLED CONTENT VALUE (RCV). Material cost multiplied by post-consumer content plus ½ the pre-consumer content, or RCV = $ X (post-consumer content + ½ pre-consumer content).

SECTION 703
FOUNDATION SYSTEMS
(Reserved)

SECTION 704
EFFICIENT FRAMING TECHNIQUES

704.1 Wood framing. Employ advanced wood framing techniques, or OVE, as recommended by the US Department of Energy's Office of Building Technology, State and Community Programs and as permitted by the enforcing agency.

704.1.1 Structural integrity. The OVE selected shall not conflict with structural framing methods for seismic or wind loading safety.

704.1.2 Framing specifications. For framing specifications, visit the web site, select publications, and select the Advanced Framing document: www.eere.energy.gov/buildings/info/

704.2 Steel framing. Design steel framing for maximum energy and material efficiency calculated to meet the requirements of the 2007 California Energy Code using the California Energy Commission's ENV-3 Form or its EZFRAME software. Techniques for accomplishing thermal bridging in the envelope include

1. Punching large holes in the stud web without affecting its structural integrity,
2. Spacing the studs as far as possible while maintaining the structural integrity of the structure,
3. Exterior rigid insulation, and
4. Detailed design of intersections of wall openings and building intersections of floors, walls, and roofs.

Efficient steel framing strategy may be found at: http://www.energy.ca.gov/papers/CEC-999-1996-004.html .

SECTION 705
MATERIAL SOURCES

705.1 Regional materials. Compared to other products in a given product category, select building materials or products for permanent installation on the project that have been harvested or manufactured within 500 miles of the project site.

1. For those materials locally manufactured, select materials manufactured using low embodied energy or those that will result in net energy savings over their useful life.
2. Regional materials shall make up at least 10%, based on cost, of total materials value.
3. If regional materials make up only part of a product, their values are calculated as percentages based on

weight.
4. Provide documentation of the origin, net projected energy savings, and value of regional materials.

705.2 Bio-based materials. Select bio-based building materials and products made from solid wood, engineered wood, bamboo, wool, cotton, cork, straw, natural fibers, products made from crops (soy-based, corn-based) and other bio-based materials with at least 50% bio-based content.

1. Bio-based materials shall make up at least 2.5%, based on cost, of total materials value.
2. Document the life cycle of the raw material and the value of the manufactured product.

705.3 Certified wood products. Employ wood-based materials and products comprising at least 50% of a major building component, such as framing, flooring, or millwork, which are certified in accordance with one of the following standards organizations' requirements:

1. Forest Stewardship Council (FSC) Principles and Criteria for wood framing and paneling. (FSC also has a certification process for federal lands.)
2. Canadian Standards Association Z809 Standards. (CSA may also have a certification process for federal lands.)
3. Sustainable Forestry Initiative Standard, 2005-2009.
4. American Tree Farm System, 2004-2008 AFF Standard
5. Programme for the Endorsement of Forest Certification Schemes (PEFC)

Provide certification from the organization's accredited certifier.

705.4 5% reused materials. Use salvaged, refurbished, refinished, or reused materials that equal 5% of the total value, based on cost, of materials on the project. Provide documentation as to the respective values.

705.5 10% reused materials. Use salvaged, refurbished, refinished, or reused materials that equal 10% of the total value, based on cost, of materials on the project. Provide documentation as to the respective values.

705.6 Sources of reused materials. Sources of some reused materials can be found at http://www.ciwmb.ca.gov/RCP/Product.asp?VW=CAT&CATID=257

See also Sections 405.1 and 405.2 for on-site materials reuse.

705.7 10% recycled content. Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) equaling 10% of the total value, based on cost, of materials on the project. Provide documentation as to the respective values.

705.8 20% recycled content. Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) equaling 20% of the total value, based on cost, of materials on the project. Provide documentation as to the respective values.

705.9 Determination of recycled content value (RCV). The recycled content of a material assembly shall be determined by weight, and the fractional value of the weight is then multiplied by the total cost of the material assembly.

705.10 Sources of recycled materials. Sources and recycled content of some recycled materials can be found at http://www.ciwmb.ca.gov/RCP/Product.asp?VW=CAT&CATID=257.

705.11 Cement and concrete. Use cement and concrete made with recycled products complying with Sections 705.11.1 through 705.11.3.

705.11.1 Fuel. Uses high-energy waste materials such as spent solvents, printing inks, paint residues, cleaning fluids, used motor oil, old tires, industrial wastes like petroleum sludge, and agricultural wastes like almond shells in the cement kiln.

705.11.2 Blended cement. Replaces portland cement with any of the following industrial by-products in the quantities given and meets ASTM C 595, Specification for Blended Hydraulic Cements, or ASTM C 1157, Performance Specification for Hydraulic Cements.

1. Fly ash meeting ASTM C 618,Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete, up to 25%
2. Slag cement meeting ASTM C 989, Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars, up to 60%
3. Silica fume meeting ASTM C 1240, Specification for Silica Fume Used in Cementitious Mixtures, up to 5% to 7%
4. Cement kiln dust may also be used as an ingredient for new cement using manufacturing BMPs.

705.11.3 Concrete. Uses recycled aggregates in one of the following manners.

1. Blast furnace slag as a lightweight aggregate
2. Recycled concrete that meets grading requirements of ASTM C33, Standard Specification for Concrete Aggregates, and, if used in reinforced concrete, has a low chloride level.

SECTION 706
ENHANCED DURABILITY AND REDUCED MAINTENANCE

706.1 Choice of materials. Compared to other products in a given product category, choose materials proven to be characterized by one or more of the following.

706.1.1 Service life. Select materials for longevity and minimal deterioration under conditions of use.

706.1.2 Reduced maintenance. Select materials that require little, if any, finishing. For those with surface protection, choose materials that do not require frequent applications of toxic or malodorous finishes.

706.1.3 Recyclability. Select materials that can be re-used or recycled at the end of their service life in the building.

706.4.2 Product Data. Request and maintain product data documenting the materials' compliance with Sections 706.1.1 through 706.1.3.

SECTION 707
WATER RESISTANCE AND MOISTURE MANAGEMENT

707.1 Weather protection. Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2 and California Energy Code Section 150, manufacturer's installation instructions, or local ordinance, whichever is more stringent.

707.2 Moisture control. Employ moisture control measures by Sections 707.2.1 through 707.2.3.

707.2.1 Drainage. Design surface grading and drainage systems to drain water away from structures.

707.2.2 Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.

707.2.3 Entries and openings. Design exterior entries and openings to prevent water intrusion into buildings, using features such as overhangs and recesses, flashings integrated with a drainage plane, and use non-pervious interior finishes in the vicinity of such openings.

SECTION 708
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

708.1 Construction waste management plan. Establish a construction waste management plan for the diverted materials for approval by the enforcement authority that:

1. Identifies the materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale.
2. Determines if materials will be sorted on-site or mixed.
3. Identifies diversion facilities where material collected will be taken.
4. Calculates the amount of materials diverted by weight or volume, but not by both.

708.2 50% construction waste. Reduce through efficient usage, recycle and/or salvage for reuse a minimum of 50% of non-hazardous construction and demolition debris, or meet local construction and demolition waste management ordinance, whichever is more stringent.

Exception: Excavated soil and land-clearing debris.

708.3 75% construction waste. Reduce through efficient usage, recycle and/or salvage for reuse a minimum of 75% of non-hazardous construction and demolition debris, or meet local construction and demolition waste management ordinance, whichever is more stringent.

Exception: Excavated soil and land-clearing debris.

708.4 Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.

SECTION 709
LIFE CYCLE ASSESSMENT

709.1 Materials and system assemblies. Select materials assemblies based on life cycle assessment of their embodied energy and green house gas emission potentials.

709.1.1 California Energy Code. Life cycle assessment tools for those materials and assemblies cited in the California Energy Code may be found at the energy commission's web site at www.energy.ca.gov/title24/2005standards/archive/documents/2002-08-27_workshop/2002-08-14_4TH_GROUP_ELEY.PDF.

709.1.2 Other materials and system assemblies. Software for calculating life cycle costs for other materials and assemblies may be found at the Athena Institute web site at: http://www.athenasmi.ca/tools/impactEstimator/ and at the NIST BEES web site at:: http://www.bfrl.nist.gov/oae/software/bees/ .

Life Cycle assessment may also be done in accordance with ISO Standard 14044, www.iso.ch .

709.1.3 Additional resources. More information on life cycle assessment may be found at the Sustainable Products Purchasers Coalition: www.sppcoalition.org ; at the American Center for Life Cycle Assessment: www.lcacenter.org ; and at U.S. EPA Environmentally Preferable Products, www.epa.gov/epp.

SECTION 710
BUILDING MAINTENANCE AND OPERATION

710.1 Recycling by occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.

710.1.1 Sample ordinance. Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the Public Resources Code. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act.) A sample ordinance for use by local agencies may be found in Appendix A of the document at the California Integrated Waste Management's web site at: http://www.ciwmb.ca.gov/Publications/LocalAsst/31000012.doc

See also Section 504 for commissioning.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 8

ENVIRONMENTAL QUALITY

SECTION 801
GENERAL

801.1 Scope. The provisions of this chapter shall outline means of reducing the quantity of air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of a building's installers, occupants, and neighbors.

SECTION 802
DEFINITIONS

802.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

COMPOSITE WOOD AND AGRIFIBER PRODUCTS. Composite wood and agrifiber products include particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates, and door cores, not including fit-out materials, furniture, and equipment (FF&E) not considered base building elements.

HVAC UNITS, SMALL. Those containing less than 0.5 lbs of refrigerant.

INTERIOR, BUILDING, The inside of the weatherproofing system.

MULTI-OCCUPANT SPACES. Indoor spaces used for presentations and training, including classrooms and conference rooms.

SINGLE OCCUPANT SPACES. Private offices, workstations in open offices, reception workstations, and ticket booths.

VOC is a volatile organic compound.

SECTION 803
SPACE HEATING AND FIREPLACES

803.1 Install only a direct-vent sealed-combustion gas or sealed wood fireplace, or a sealed woodstove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150.

SECTION 804
POLLUTANT CONTROL

804.1 Indoor air quality (IAQ) during construction. Maintain IAQ as provided in Sections 804.1.2 and 804.1.3.

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804.1.2 Temporary ventilation. Provide temporary ventilation during construction in accordance with Section 121 of the California Energy Code, CCR, Title 24, Part 6, and Chapter 4 of CCR, Title 24, Part 8, and as follows:

1. If the HVAC system used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992. Replace all filters with MERV 13 filters by Section 804.2.3 immediately prior to occupancy.
2. If the HVAC system is not used, ventilate with through openings using fans to produce a minimum of three air changes per hour.
3. If the building is occupied during demolition or construction, meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3.
4. During dust-producing operations, do not use HVAC, and ventilate as in No. 3 above. Protect supply and return openings from dust.

804.1.3 Additional IAQ measures. Employ additional measures as follows:

1. When using generators to generate temporary power, use generators meeting the requirements of CCR, Title 13, Chapter 9, or local ordinance, whichever is more stringent.
2. Protect on-site absorbent materials from moisture. Remove and replace any materials with evidence of mold, mildew, or moisture infiltration.
3. Store odorous and high VOC-emitting materials off-site, without packaging, for a sufficient period to allow odors and VOCs to disperse.
4. Install, once on the job, odorous and high VOC-emitting materials prior to those that are porous or fibrous.
5. Clean oil and dust from ducts prior to use.

804.2 IAQ post-construction. Flush out the building with all interior finishes installed using continuous, 100% outside air from HVAC units for a minimum of 14 days, 24 hours per day. Maintain an internal temperature between 60 and 78 degrees F and a maximum relative humidity of 60%. Occupancy may be allowed after seven days

provided flush-out continues for the full 14-day period.

Exception. If continuous mechanical ventilation is not possible, provide 100% outside air equivalent to a 14-day flush-out.

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804.4 Finish material pollutant control. Finish materials shall comply with Sections 804.1.1 through 804.1.4.

804.4.1 Adhesives and sealants. Adhesives and sealants used on the project shall meet the requirements of the following standards.

1. Adhesives, adhesive bonding primers, adhesive primers, sealants and sealant primers shall comply with Table 804.4.1.

2. Aerosol adhesives shall meet the requirements of California Code of Regulations, Title 17, commencing with Section 94507, http://ccr.oal.ca.gov/ .

804.4.2 Paints and coatings. Architectural paints and coatings shall comply with Table 804.4.2.

TABLE 804.4.1
ADHESIVE VOC LIMIT*

Less Water and Less Exempt Compounds in Grams per Liter

Architectural Applications	Current VOC Limit
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesive	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100
Single Ply Roof Membrane Adhesives	250

TABLE 804.4.2

COATING VOC LIMITS

Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds

COATING CATEGORY	CEILING LIMIT*	CURRENT LIMIT	EFFECTIVE DATE 7/1/08	EFFECTIVE DATE
Bond Breakers	350			
Clear Wood Finishes Varnish Sanding Sealers Lacquer	350 350 350 680	275 275 275 275		
Clear Brushing Lacquer	680	275		
Concrete-Curing Compounds	350	100		
Dry-Fog Coatings	400	150		
Fire-Proofing Exterior Coatings	450	350		
Flats	250	100	50	
Floor Coatings	420	50		
Graphic Arts (Sign) Coatings	500			
Industrial Maintenance (IM) Coatings High Temperature IM Coatings Zinc-Rich IM Primers	420 420	100 420 100		
Japans/Faux Finishing Coatings	700	350		
Magnesite Cement Coatings	600	450		
Mastic Coatings	300			
Metallic Pigmented Coatings	500			

Multi-Color Coatings	420	250		
Nonflat Coatings Nonflat High Gloss	250 250	50 50		
Pigmented Lacquer	680	275		
Pre-Treatment Wash Primers	780	420		
Primers, Sealers, and Undercoaters	350	100		
Quick-Dry Enamels	400	50		
Quick-Dry Primers, Sealers, and Undercoaters	350	100		
Recycled Coatings	250			
Roof Coatings Roof Coatings, Aluminum	300 500	50 100		
Roof Primers, Bituminous	350			
Rust Preventative Coatings	420	100		
Shellac Clear Pigmented	730	550		
Specialty Primers	350	100		
Stains Interior	350 250	100		
Swimming Pool Coatings Repair Other	650 340	340		
Waterproofing Sealers	400	100		
Waterproofing Concrete/Masonry Sealers	400	100		
Wood Preservatives Below-Ground Other	350	350		

* The specified limits remain in effect unless revised limits are listed in subsequent columns in the Table of Standards.

804.4.3 Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of one of the following:

1. Carpet and Rug Institute's Green Label or Green Label Plus Program, http://www.carpet-rug.com/
2. CDPH Standard Practice for the testing of VOCs (Specification 01350)
3. Department of General Services, California Gold Sustainable Carpet Standard, http://www.green.ca.gov/EPP/standards.htm
4. Scientific Certifications Systems Indoor Advantage™ Gold and FloorScore™, http://www.scscertified.com/iaq/indooradvantage.htm

804.4.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.

804.4.3.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Section 804.1.1: VOC limit of 50 grams per liter (less water and less exempt compounds).

804.4.4 Composite wood and agrifiber products. Composite wood and agrifiber products used on the interior of the building shall contain no added urea-formaldehyde resins. Adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no urea-formaldehyde resins.

Document in project specifications and in contractor's submitted product data sheets.

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804.4.5 Resilient flooring systems. Comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List, www.chps.net/manual/lem_table.htm .

804.4.6 Thermal Insulation. Comply with Chapter 12-13 in Title 24, Part 12, the California Referenced Standards Code, and with the VOC-emission limits defined in CHPS Low-emitting Materials List, www.chps.net/manual/lem_table.htm .

804.4.7 Acoustical ceilings and wall panels. Comply with Chapter 8 in Title 24, Part 2, the California Building Code, and with the VOC-emission limits defined in the CHPS Low-emitting Materials List, www.chps.net/manual/lem_table.htm .

804.5 Hazardous particulates and chemical pollutants. Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.

804.5.1 Entryway systems. Install permanent entryway systems measuring at least six feet in the primary

direction of travel to capture dirt and particulates at entryways directly connected to the outdoors.

1. Qualifying entryways are those that serve as regular entry points for building users.
2. Acceptable entryway systems include, but are not limited to, permanently installed grates, grilles, or slotted systems that allow cleaning underneath.
3. Roll-out mats are only acceptable when maintained regularly by janitorial contractors as documented in service contract, or by in-house staff as documented by written policies and procedures.

804.5.2 Isolation of pollutant sources. In rooms where activities produce hazardous fumes or chemicals, such as garages, janitorial or laundry rooms, and copy or printing rooms, exhaust them and isolate them from their adjacent rooms.

1. Exhaust each space with no air recirculation in accordance with ASHRAE 62.1, Table 6-4 to create negative pressure with respect to adjacent spaces with the doors to the room closed.
2. For each space, provide self-closing doors and deck to deck partitions or a hard ceiling.
3. Install low-noise, vented range hoods for all cooking appliances and in laboratory or other chemical mixing areas.

804.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of 13.

804.6 Ozone depletion and global warming reductions. Installations of HVAC, refrigeration, and fire suppression equipment shall comply with Sections 804.3.1, and optionally Section 804.3.2 or 804.3.3.

804.6.1 CFCs. Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

804.6.2 HCFCs and Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain HCFCs or Halons.

Exception: Small HVAC and other equipment such as standard refrigerators, small water coolers, and any other cooling equipment that contains less than 5 pounds of refrigerant.

804.6.3 Use of refrigerants. Do not use refrigerants.

804.7 Environmental tobacco smoke (ETS) control. Prohibit smoking within25 feet of building entries, outdoor air intakes and operable windows and in buildings by either Section 804.4.1 or 804.4.2; or as enforced by ordinances, regulations, or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent.

804.7.1 No smoking. Prohibit smoking in the building.

804.7.2 Designated smoking areas. Prohibit smoking in the building except in designated smoking areas as permitted by Health and Safety Code Section 18875, Labor Code Section 6404.5, or local ordinance, whichever is more stringent.

SECTION 805
INDOOR MOISTURE AND RADON CONTROL

805.1 Indoor moisture control. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1203 and Chapter 14. For additional measures not applicable to low-rise residential occupancies, see Section 707.2 of this code.

SECTION 806
INDOOR AIR QUALITY AND EXHAUST

806.1 Outside air delivery. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 of the California Energy Code, CCR, Title 24, Part 6 and Chapter 4 of CCR, Title 8, or the applicable local code, whichever is more stringent.

806.2 Carbon dioxide (CO_2) monitoring. Install permanent CO_2 monitoring equipment that permits adjustment of ventilation system controls and set points that maintain ventilation rates within 15% tolerance of California Energy Code requirements.

Exception: In buildings without energy management systems, monitoring equipment shall trigger alarms to alert facilities operators or occupants of ventilation deficiencies.

SECTION 807
ENVIRONMENTAL COMFORT

807.1 Lighting and thermal comfort controls. Provide controls as described in Sections 807.1.1 and 807.1.2.

807.1.1 Single-occupant spaces. Provide individual controls that meet energy use requirements in the 2007 California Energy Code by Sections 807.1.1.1 and 807.1.1.2.

807.1.1.1 Lighting. Provide individual lighting controls for at least 90% of the building occupants.

807.1.1.2 Thermal comfort. Provide individual thermal comfort controls for at least 50% of the building occupants.

1. Occupants shall have control over at least one of the factors of air temperature, radiant temperature, air speed, and humidity as described in ASHRAE 55-2004.
2. Occupants inside 20 feet of and within 10 feet either side of operable windows can substitute windows to control thermal comfort. The areas of operable window must meet the requirements of Section 121 of the California Energy Code

807.1.2 Multi-occupant spaces. Provide lighting and thermal comfort system controls for all shared multi-occupant spaces.

807.2 Verification of indoor environmental quality. Within a period of six to 18 months after occupancy, conduct an indoor environmental survey of building occupants.

1. Collect voluntary anonymous responses about indoor environmental quality, including thermal comfort, air quality, lighting, acoustics, daylighting, and operable windows.
2. Take corrective action if the survey results indicate that more than 20% of surveyed occupants are dissatisfied with any of the indoor environmental quality parameters in the building.
3. Samples of survey format and appropriate responses may be found at http://www.cbe.berkeley.edu/RESEARCH/survey.htm .

807.3 Daylight. Provide daylit spaces as required for toplighting and sidelighting in the 2007 California Energy Code. In constructing a design, consider the following:

1. Use of light shelves and reflective room surfaces to maximize daylight penetrating the rooms.
2. Means to eliminate glare and direct sun light, including through skylights.
3. Use of photosensors to turn off electric lighting when daylight is sufficient.
4. Not using diffuse daylighting glazing where views are desired.

807.4 Views. Achieve direct line of sight to the outdoor environment via vision glazing between 2'6" and 7'6" above finish floor for building occupants in 90% of all regularly occupied areas as demonstrated by plan view and section cut diagrams.

807.4.1 Interior office spaces. Entire areas of interior office spaces may be included in the calculation if at least 75% of each area has direct line of sight to perimeter vision glazing.

807.4.2 Multi-occupant spaces. Include in the calculation the square footage with direct line of sight to perimeter vision glazing.

Exceptions to Sections 807.3 and 807.4: Copy/printing rooms, storage areas, mechanical spaces, restrooms, auditoria, and other intermittently or infrequently occupied spaces or spaces where daylight would interfere with use of the space.

807.5 Acoustical control. Employ building assemblies and components with Sound Transmission Coefficient (STC) values determined in accordance with ASTM E90 and ASTM E413.

807.5.1 Exterior noise transmission. Wall and floor-ceiling assemblies making up the building envelope shall have an STC of at least 50, and exterior windows shall have a minimum STC of 30 for any of the following building locations:

1. Within 1000 ft. (300 m.) of freeways.
2. Within 5 mi. (8 km.) of airports serving more than 10,000 commercial jets per year.
3. Where sound levels at the property line regularly exceed 65 decibels, other than occasional sound due to church bells, train horns, emergency vehicles and public warning systems.

807.5.2 Interior sound. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 50.

SECTION 808
OUTDOOR AIR QUALITY
(Reserved)

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 9

REFERENCED STANDARDS

SECTION 901

GENERAL

901.1 This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard.

AAMA American Architectural Manufacturers Association
1827 Walden Office Square
Suite 550
Schaumburg, IL 60173-4268
ANSI American National Standards Institute
25 West 43rd Street
Fourth Floor
New York, NY 10036
ARI Air Conditioning and Refrigeration Institute
4301 North Fairfax Drive
Suite 200
Arlington, VA 22203
ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
1791 Tullie Circle, NE
Atlanta, GA 30329-2305
ASME American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990
ASTM ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2859
CSA Canadian Standards Association
5060 Spectrum Way
Mississauga, Ontario, Canada L4W 5N6
CTI Cooling Technology Institute
2611 FM 1960 West, Suite H-200
Houston, TX 77068-3730
DOE U.S. Department of Energy
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325
HI Hydronics Institute, Division of the Gas Appliance Manufacturers Association
P.O. Box 218
Berkeley Heights, NJ 07054
ICC International Code Council, Inc.
National Headquarters
500 New Jersey Avenue NW
6th Floor
Washington, D.C. 20001
California Office
Los Angeles District Office

5360 Workman Mill Road
Whittier, CA 90601
NFRC National Fenestration Rating Council, Inc.
8484 Georgia Avenue
Suite 320
Silver Spring, MD 20910
SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc.
4021 Lafayette Center Drive
Chantilly, VA 20151-1209
UL Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062-2096
WDMA Window and Door Manufacturers Association
1400 East Touhy Avenue, Suite 470
Des Plaines, IL 60018

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 10

INSTALLER AND THIRD PARTY QUALIFICATIONS

SECTION 1001
GENERAL
(Reserved)

SECTION 1002
QUALIFICATIONS
(Reserved)

SECTION 1003
VERIFICATIONS
(Reserved)

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 11

GREEN APPLICATION CHECKLIST (AC-BSC)

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
PLANNING AND DESIGN					
SITE SELECTION (403)					
403.1 Site selection. The site is selected avoiding farm land, flood plain, habitat, wetlands, or parkland.		☐			
403.2 Site selection. The site is selected to minimize environmental impact by one or more of the following:					
403.2.1 Development density. Conformance with development density goals.		☐			
403.2.2 Community connectivity. Locate project on previously developed site within a ½ mile of at least ten basic services. (See 403.2.2 for accepted services)		☐			
403.3 Public transportation access. Locate project within ½ mile of existing or planned public transit.		☐			
403.4 Brownfield or Greyfield site redevelopment. Select for development a brownfield, greyfield, or infill site.		☐			
SITE PRESERVATION (404)					
404.1 Strom water pollution prevention Plan. Projects 1 acre & under to contain a Storm Water Pollution Prevention Plan (SWPPP).		☐		☐	
404.2 Plan to protect or restore habitat. Protect and restore greenfield sites.					
404.2.1 Greenfield. Limit site disturbance in accordance with 404.2.1.		☐	☐		
404.2.2 Previously developed sites. Restore or protect at least 50% of site area with native or adapted vegetation.		☐	☐		
404.2.3 Birds. Incorporate bird friendly building and site design. (See 404.2.3 for design recommendations)		☐	☐		
404.3 Reduce development footprint and optimize open space. Reduce development / Optimize open space:					
404.3.1 Local zoning. Exceed by 25% open space zoning requirements for vegetation.		☐	☐		
404.3.2 No Local zoning requirement. Provide vegetated					

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
open space area adjacent to the building and equal to the building footprint area.		☐	☐		
403.3.3 No open space required in zoning ordinance. Provide vegetated open space equal to 20% of the site area.		☐	☐		
DECONSTRUCTION & REUSE (405)					
405.1 Existing building structure. Maintain at least 75% of existing building structure based on area.		☐	☐		
405.2 Existing non-structural elements. Reuse existing interior non-structural elements in at least 50% of the area.		☐	☐		
SITE DEVELOPMENT (406)					
406.3 Storm water design. Calculate runoff rate and quantity of storm water.					
406.3.1 Storm water runoff rate and quantity. Develop a storm water management plan so that no net increase in storm water runoff from existing to developed conditions.		☐	☐		
406.3.2 Storm water runoff quantity. Implement best management practices to treat storm water runoff based on 85th percentile.		☐	☐		
406.3.3 Parking lots. Allow drainage into planter areas or use other bioretention techniques.		☐	☐		
406.4 Bicycle storage and changing rooms. Provide suitable means of securing bicycles for 10% or more of parking capacity (3% or more long-term storage) and changing and shower facilities		☐	☐		
406.5 Fuel efficient vehicles. Use purchasing policies and refueling sites for low emitting vehicles for state employees use per Management Memo MM 06-03.		☐	☐		
406.5.1 Preferred parking. 5% of total parking capacity to be dedicated to low-emitting and fuel-efficient vehicles.		☐	☐		
406.5.2 Electric vehicle charging. Provide as follows, meeting CBC, Section 406.7:					
406.5.2.1 1-50 parking spaces. 1 outlet or provide for future outlet.		☐	☐		
406.5.2.1 51-200 parking spaces. 2 outlets or provide for future outlets.		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
406.5.2.1 201 or more parking spaces. 4 outlets or provide for future outlets.		☐	☐		
406.6 Parking capacity. Design parking capacity to meet but not exceed minimum local zoning requirements; provide preferred parking for carpools/vanpools to serve 5% of the building occupants.		☐	☐		
406.6.1 Reduce parking capacity. With approval of the enforcement authority, employee strategies to reduce on site parking area by:					
1. Use of on street parking or compact spaces.		☐	☐		
2. Implement and Document programs that encourage occupant carpool, ride share or alternate transportation.		☐	☐		
406.7 Heat island effect. Reduce heat island effect by one of the following methods:					
406.7.1 Hardscape alternatives. Use one or a combination of strategies 1 through 3 for 50% of site hardscape or put 50% of parking underground.		☐	☐		
1. Provide shade (mature within 5 years of occupancy)		☐	☐		
2. Use light colored / high-albedo materials		☐	☐		
3. Use open-grid pavement system		☐	☐		
406.7.2 Roof area alternatives. Meet one of the following criteria:					
1. Use roofing materials having a Solar Reflectance Index (SRI) of at least 65 (aged) for slopes < 2 : 12, and at least 25 (aged) for slopes > 2 : 12.		☐	☐		
2. Install a vegetated roof for at least 50% of the roof area		☐	☐		
3. Install a combination of highly reflective and vegetated roof to cover collectively 75% of the roof area		☐	☐		
406.7.3 Exterior walls and A/C condensing units. For wall surfaces,					
1. Provide vegetative or man-made shading devices for east-, south-, and west-facing walls or		☐	☐		
2. Use wall surfacing with SRI 25 (aged), for 75% of opaque wall areas.		☐	☐		
and for A/C condensing units,					
3. Shade 75% of the horizontal surface of air conditioner condensing units without impeding air flow.		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
406.8 Light pollution reduction. Design interior and exterior lighting complying with lighting power requirements of the 2007 California Energy Code such that zero direct-beam illumination leaves the building site. Meet requirements of IESNA and (RP-33-99) using the following strategies: 1. Shield all exterior luminaries 2. Contain interior lighting within each source 3. Contain all exterior lighting within property boundaries **Exception:** See Part 2, Chapter 12 for campus lighting reg. for parking facilities and walkways.		☐	☐		
ENERGY EFFICIENCY					
PERFORMANCE REQUIREMENTS (503)					
503.1 Energy performance. Using an Alternative Calculation Method approved by the California Energy Commission, calculate each building's energy costs and CO_2 emissions, and compare it to the standard or "budget" building. **503.1.1 Tier 1.** Exceed 2007 California Energy Code requirements by 15%. **503.1.2 Tier 2.** Exceed 2007 California Energy Code requirements by 30%.		☐ ☐		☐ ☐	
PRESCRIPTIVE MEASURES (504)					
504.1 ENERGY STAR equipment and appliances. All equipment and appliances provided by the builder shall be ENERGY STAR labeled if ENERGY STAR is applicable to that equipment or appliance		☐	☐		
504.2 Energy monitoring. Provide sub-metering or equivalent combinations of sensor measurements and thermodynamic calculations, if appropriate, to record energy use data for each major energy system in the building.		☐	☐		
504.3 Demand response. HVAC systems with Direct Digital Control Systems and centralized lighting systems shall include pre-programmed demand response strategies that are automated with either a Demand Response Automation Internet Software Client or dry contact relays. **504.3.1 HVAC.** The pre-programmed demand response strategies should be capable of reducing the peak HVAC demand		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
by cooling temperature set point adjustment.					
504.3.2 Lighting. The pre-programmed demand response strategies should be capable of reducing the total lighting load by a minimum 30% through dimming control or bi-level switching.		☐	☐		
504.3.3 Software clients. The software clients will be capable of communicating with a DR Automation Server.		☐	☐		
504.4 Commissioning. Building commissioning for all building systems covered by T24, Part 6, process systems, and renewable energy systems shall be included in the design and construction processes of the building project. Commissioning requirements shall include as a minimum items listed in 504.4.		☐	☐		
504.4.1 Owner's Project Requirements (OPR). Documented before the design phase of the project begins the OPR shall include items listed in 504.4.1.		☐	☐		
504.4.2 Basis of Design (BOD). A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project and updated periodically to cover the systems listed in 504.4.2.		☐	☐		
504.4.3 Commissioning plan. A commissioning plan describing how the project will be commissioned shall be started during the design phase of the building project and shall include as a minimum items listed in 504.4.3.		☐	☐		
504.4.4 Functional performance testing shall demonstrate the correct installation and operation of each component, system, and system-to-system interface in accordance with the approved plans and specifications.		☐	☐		
504.4.5 Post construction documentation and training. A Systems Manual and Systems Operations Training are required.					
504.4.5.1 Systems manual. The Systems Manual shall be delivered to the building owner and facilities operator and shall include the items listed in		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
504.4.5.1. **504.4.5.2 Systems operations training.** The training of the appropriate maintenance staff for each equipment type and/or system shall include as a minimum items listed in 504.4.5.2. **504.4.6 Commissioning report.** A complete report of commissioning process activities undertaken through the design, construction and post-construction phases of the building project shall be completed and provided to the owner.		☐ ☐	☐ ☐		
504.5 Building orientation and shading. Locate, orient and shade the building as follows: 1. Long sides facing north and south 2. Exterior shade for south-facing windows during summer solstice 3. Vertical shading for east- and west-facing windows 4. Protect the building from thermal loss, drafts, and degradation of the building envelope caused by wind and wind-driven materials.		☐ ☐ ☐ ☐	☐ ☐ ☐ ☐		
RENEWABLE ENERGY (511)					
511.1 On-site renewable energy. Use on-site renewable energy for at least 1% of the electrical service load calculated in accordance with the 2007 California Electrical Code. **511.1.1 Documentation.** Calculate renewable on-site energy cost savings as a percentage of estimated local utility rates for conventional fuel types. **511.1.2 Net metering.** Factor in net-metering, if offered by local utility, on an annual basis. **511.2 Green Power.** Participate in the local utility's renewable energy portfolio program that provides a minimum of 50% electrical power from renewable sources. Maintain documentation through utility billings.		☐ ☐ ☐	☐ ☐ ☐		
ELEVATORS, ESCALATORS, AND OTHER EQUIPMENT (512)					
512.1 Elevators and escalators. In buildings with more than one elevator or two escalators, provide controls to reduce the energy					

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
demand. Document the controls in the project specifications and commissioning plan. **512.1.1 Controls.** Controls that reduce energy demand shall meet requirements of CCR, Title 8, Chapter 4, Subchapter 6 and shall not interrupt emergency operations for elevators required in CCR, T24, Part 2.	☐	☐	☐ ☐		
WATER EFFICIENCY AND CONSERVATION					
INDOOR WATER USE (603)					
603.1 Meters. Separate meters or submeters shall be installed for indoor and outdoor potable water use.		☐		☐	
603.2 20% Savings. A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 20% shall be provided. (Calculate savings by Water Use Worksheets.)		☐	☐		
603.3 Appliances. 1. Clothes washers shall have a maximum Water Factor (WF) that will reduce the use of water. 2. Dishwashers shall meet the criteria in 603.3(2)(a) and (b). 3. Ice makers shall be air cooled. 4. Food steamers shall be connection-less or boiler-less. 5. The use and installation of water softeners shall be limited or prohibited by local agencies. 6. New buildings and facilities shall be dual plumbed for potable and recycled water systems		☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐		
603.4 Wastewater reduction. Each building shall reduce the generation of wastewater by the following methods: 1. The installation of water-conserving fixtures or using non-potable water systems. 2. Treat wastewater on-site to tertiary standards.		☐ ☐	☐ ☐		
OUTDOOR WATER USE (604)					
604.1 Water budget. A water budget shall be developed for landscape irrigation use.	☐		☐		
604.2 Potable water reduction. Provide water efficient landscape irrigation design that reduces by 50% the use of potable water. Methods used to accomplish the requirements of this section shall		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
include, but not be limited to, the items listed in 604.2.					
604.3 Potable water elimination. Provide a water efficient landscape irrigation design that eliminates the use of potable water beyond the initial requirements for plant installation and establishment. Methods used to accomplish the requirements of this section shall include, but not be limited to, the items listed in 604.3.		☐	☐		
604.4 Graywater Irrigation System. Install graywater collection system for onsite subsurface irrigation using graywater collected from showers, lavatory sinks and laundry water.		☐	☐		
604.5 Rainwater or stormwater collection systems. Constructed water collection devices may store water for landscape irrigation.		☐	☐		
MATERIAL CONSERVATION AND RESOURCE EFFICIENCY					
EFFICIENT FRAMING SYSTEMS (704)					
704.1 Wood framing. Employ advanced wood framing techniques, or OVE, as permitted by the enforcing agency.		☐	☐		
704.2 Steel framing. Design steel framing for maximum energy and material efficiency. Steel framing techniques include those listed in 704.3.		☐	☐		
MATERIAL SOURCES (705)					
705.1 Regional materials. Select building materials or products for permanent installation on the project that have been harvested or manufactured within 500 miles of the project site, meeting the criteria listed in 705.1.		☐	☐		
705.2 Bio-based materials. Select bio-based building materials per Items (1) and (2) of 705.2.		☐	☐		
705.3 Certified wood products. Employ wood-based materials and products comprising at least 50% of a major building component, which are certified in accordance with one of the standards organizations listed in Items (1) through (5) in 705.3. Provide certification from the organization's accredited certifier.		☐ ☐	☐		☐
705.4 5% reused materials. Use salvaged, refurbished, refinished, or reused materials that equal 5% of the total value, based on cost, of materials on the project.		☐	☐		
705.5 10% reused materials. Use					

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
salvaged, refurbished, refinished, or reused materials that equal 5% of the total value, based on cost, of materials on the project.		☐	☐		
705.7 10% recycled content. Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) equaling 20% of the total value, based on cost, of materials on the project..		☐	☐		
705.8 20% recycled content. Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) equaling 20% of the total value, based on cost, of materials on the project.		☐	☐		
705.11 Cement and concrete. Use cement and concrete made with recycled products complying with Sections 705.11.1 through 705.11.3.					
705.11.1 Fuel. Use of high-energy waste materials in the cement kiln.		☐	☐		
705.11.2 Blended cement. Replaces portland cement with a percentage of any of the industrial by-products listed in Items (1) through (4) in 705.11.2.		☐	☐		
705.11.3 Concrete. Use of recycled aggregates in the mix.		☐	☐		
ENHANCE DURABILITY AND REDUCED MAINTENANCE (706)					
706.1.1 Service life. Select materials for longevity and minimal deterioration under conditions of use.		☐	☐		
706.1.2 Reduced maintenance. Select materials that require little, if any, finishing.		☐	☐		
706.1.3 Recyclability. Select materials that can be re-used or recycled at the end of their service life.		☐	☐		
WEATHER RESISTANCE AND MOISTURE MANAGEMENT (707)					
707.1 Weather protection. Provide a weather-resistant exterior wall and foundation envelope as required by T24, Part 2, Section 1403.2 and Part 6, Section 150, manufacturer's installation instructions, or local ordinance.	☐		☐		
707.2 Moisture control. Employ moisture control measures by Sections 707.2.1 through 707.2.3.					
707.2.1 Drainage. Drain water away from structures.		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
707.2.2 Sprinklers; Prevent irrigation spray on structures. **707.2.3 Entries and openings.** Design exterior entries and openings to prevent water intrusion into buildings.		☐ ☐	☐ ☐		
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING (708)					
708.1 Construction waste management plan. Establish a construction waste management plan for the diverted materials listed in Section 708.1.		☐	☐		
708.2 50% construction waste. Reduce through efficient usage, recycle and/or salvage for reuse a minimum of 50% of non-hazardous construction and demolition debris. **Exception:** Excavated soil and land-clearing debris.		☐	☐		
708.3 75% construction waste. Reduce through efficient usage, recycle and/or salvage for reuse a minimum of 75% of non-hazardous construction and demolition debris, **Exception:** Excavated soil and land-clearing debris.		☐	☐		
708.4 Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.		☐	☐		
LIFE CYCLE ASSESSMENT (709)					
709.1 Materials and system assemblies. Select materials assemblies based on life cycle assessment of their embodied energy and green house gas emission potentials. See 709.1.1 through 709.1.3 for available tools.		☐	☐		
BUILDING MAINTENANCE AND OPERATION (709)					
710.1 Recycling by occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling.	☐		☐		
ENVIRONMENTAL QUALITY					
SPACE HEATING AND FIREPLACES (803)					
803.1 Install only a direct-vent sealed-combustion gas or sealed wood fireplace, or a sealed woodstove, and refer to residential requirements in the California		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
Energy Code, Title 24, Part 6, Subchapter 7, Section 150.					
POLLUTANT CONTROL (804)					
804.1 Indoor air quality (IAQ) during construction. Maintain IAQ as provided in Sections 804.1.1 and 804.1.2.					
804.1.1 Temporary ventilation. Provide temporary ventilation during construction in accordance with Section 121 of the California Energy Code, CCR, Title 24, Part 6, and Chapter 4 of CCR, Title 24, Part 8, and as listed in Items 1 through 4 in 804.1.1.		☐	☐		
804.1.2 Additional IAQ measures. Employ additional measures as listed in Items 1 through 5 in 804.1.2:		☐	☐		
804.2 IAQ post-construction. Flush out the building with all interior finishes installed using continuous, 100% outside air from HVAC units for a minimum of 14 days, 24 hours per day by Section 804.2.		☐	☐		
804.4 Finish material pollutant control. Finish materials shall comply with Sections 804.1.1 through 804.1.4.					
804.4.1 Adhesives and sealants. Adhesives and sealants used on the project shall meet the requirements of the following standards.					
1. Adhesives, adhesive bonding primers, adhesive primers, sealants and sealant primers shall comply with Table 804.4.1.		☐	☐		
2. Aerosol adhesives shall meet the requirements of California Code of Regulations, Title 17, commencing with Section 94507		☐	☐		
804.4.2 Paints and coatings. Architectural paints and coatings shall comply with Table 804.4.2.		☐	☐		
804.4.3 Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of one of the programs listed in Items 1 through 4 in 804.4.3.		☐	☐		
804.4.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
804.4.3.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Section 804.1.1.		☐	☐		
804.4.4 Composite wood and agrifiber products. Composite wood and agrifiber products and adhesives used on the interior of the building shall contain no added urea-formaldehyde resins.		☐	☐		
804.4.5 Resilient flooring systems. Comply with the VOC-emission limits defined in the CHPS Low-emitting Materials List.		☐	☐		
804.4.6 Thermal Insulation. Comply with Chapter 12-13 in Title 24, Part 12 and with the VOC-emission limits defined in CHPS Low-emitting Materials List.		☐	☐		
804.4.7 Acoustical ceilings and wall panels. Comply with Chapter 8 in Title 24, Part 2 and with the VOC-emission limits defined in the CHPS Low-emitting Materials List		☐	☐		
804.5 Hazardous particulates and chemical pollutants. Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.					
804.5.1 Entryway systems. Install permanent entryway systems measuring at least six feet in the primary direction of travel to capture dirt and particulates at entryways directly connected to the outdoors as listed in Items 1 through 3 in 804.5.1.		☐	☐		
804.5.2 Isolation of pollutant sources. In rooms where activities produce hazardous fumes or chemicals, exhaust them and isolate them from their adjacent rooms as listed in Items 1 through 3 in 804.5.2.		☐	☐		
804.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a MERV of 13.		☐	☐		
804.6 Ozone depletion and global warming reductions. Installations of HVAC, refrigeration, and fire suppression equipment shall comply with Sections 804.3.1, and optionally Section 804.3.2 or 804.3.3.					
804.6.1 CFCs. Install HVAC, refrigeration and fire suppression	☐		☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
equipment that do not contain CFCs. **804.6.2 HCFCs and Halons.** Install HVAC, refrigeration and fire suppression equipment that do not contain HCFCs or Halons. **804.6.3 Use of refrigerants.** Do not use refrigerants.		☐ ☐	☐ ☐		
804.7 Environmental tobacco smoke (ETS) control. Prohibit smoking within25 feet of building entries, outdoor air intakes and operable windows and in buildings by either Section 804.4.1 or 804.4.2; or as enforced by local ordinances, regulations, or policies whichever are more stringent. **804.7.1 No smoking.** Prohibit smoking in the building. **804.7.2 Designated smoking areas.** Prohibit smoking in the building except in designated smoking areas as permitted by H&SC Section 18875, LC Section 6404.5, or local ordinance, whichever is more stringent.		☐ ☐	☐ ☐		
INDOOR MOISTURE AND RADON CONTROL (805)					
805.1 Indoor moisture control. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1203 and Chapter 14.		☐	☐		
AIR QUALITY AND EXHAUST (806)					
806.1 Outside air delivery. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 of the California Energy Code, CCR, Title 24, Part 6 and Chapter 4 of CCR, Title 8, or the applicable local code, whichever is more stringent.	☐		☐		
806.2 Carbon dioxide (CO_2) monitoring. Install permanent CO_2 monitoring equipment that permits adjustment of ventilation system controls and set points that maintain ventilation rates within 15% tolerance of California Energy Code requirements. **Exception:** In buildings without energy management systems, monitoring equipment shall trigger alarms to alert facilities operators or occupants of ventilation deficiencies.		☐	☐		
ENVIRONMENTAL COMFORT (807)					

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
807.1 Lighting and thermal comfort controls. Provide controls as described in Sections 807.1.1 and 807.1.2.					
807.1.1 Single-occupant spaces. Provide individual controls that meet energy use requirements in the 2007 California Energy Code by Sections 807.1.1.1 and 807.1.1.2.		☐	☐		
807.1.1.1 Lighting. Provide individual lighting controls for at least 90% of the building occupants.		☐	☐		
807.1.1.2 Thermal comfort. Provide individual thermal comfort controls for at least 50% of the building occupants by Items 1 and 2 in 807.1.1.2.		☐	☐		
807.1.2 Multi-occupant spaces. Provide lighting and thermal comfort system controls for all shared multi-occupant spaces.		☐	☐		
807.2 Verification of indoor environmental quality. Within a period of six to 18 months after occupancy, conduct an indoor environmental survey of building occupants.		☐	☐		
1. Collect voluntary anonymous responses about indoor environmental quality, including thermal comfort, air quality, lighting, acoustics, daylighting, and operable windows.		☐	☐		
2. Take corrective action if the survey results indicate that more than 20% of surveyed occupants are dissatisfied with any of the indoor environmental quality parameters in the building.		☐	☐		
807.3 Daylight. Provide daylit spaces as required for toplighting and sidelighting in the 2007 California Energy Code. In constructing a design, consider Items 1 through 4 in 807.3.		☐	☐		
807.4 Views. Achieve direct line of sight to the outdoor environment via vision glazing between 2'6" and 7'6" above finish floor for building occupants in 90% of all regularly occupied areas.		☐	☐		
807.4.1 Interior office spaces. Entire areas of interior office spaces may be included in the calculation if at least 75% of each area has direct line of sight to perimeter vision glazing.		☐	☐		
807.4.2 Multi-occupant spaces. Include in the calculation the		☐	☐		

GREEN BUILDING FEATURE	REQUIRED	OPTIONAL	VERIFICATION		
			SELF	ENFORCE. AIUTHORITY	3RD PARTY
square footage with direct line of sight to perimeter vision glazing.					
807.5 Acoustical control. Employ building assemblies and components with STC values determined in accordance with ASTM E90 and ASTM E413.		☐	☐		
807.5.1 Exterior noise transmission. Wall and floor-ceiling assemblies making up the building envelope shall have an STC of at least 50, and exterior windows shall have a minimum STC of 30 for any of the building locations listed in Items 1 through 3 in 807.5.1.		☐	☐		
807.5.2 Interior sound. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 50.		☐	☐		

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

CHAPTER 11

WORKSHEET (WS-1)
BASELINE WATER USE

BASELINE WATER USE CALCULATION TABLE										
Fixture Type	**Quantity**		**Flow-rate [2] (gpm)**		**Duration**		**Daily uses**	**Occupants[3,4]**		**Gallons per day**
Showerheads		X	2.5	X	5 min.	X	1		=	
Showerheads Residential		X	2.5	X	8 min.	X	1		=	
Lavatory Faucets Residential		X	2.2	X	25 min.	X	3		=	
Kitchen Faucets		X	2.2	X	4 min.	X	1		=	
Replacement Aerators		X	2.2	X		X			=	
Wash Fountains		X	2.2	X		X			=	
Metering Faucets		X	0.25	X	.25 min.	X	3		=	
Metering Faucets for Wash Fountains		X	2.2	X	.25 min.	X			=	
Gravity tank type Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female		=	
Flushometer Tank Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female		=	
Flushometer Valve Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female		=	
Electromechanical Hydraulic Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female		=	
Blowout Water Closets		X	3.5	X	1 flush	X	1 male[1] 3 female		=	
Urinals		X	1.0	X	1 flush	X	2 male			
Total daily baseline water use (BWU)									=	
(BWU) X .80 = Allowable water use										

[1] Except for low-rise residential occupancies the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

WORKSHEET (WS-2)
20% REDUCTION WATER USE CALCULATION TABLE

20% REDUCTION WATER USE CALCULATION TABLE										
Fixture Type	**Quantity**		**Flow-rate [2] (gpm)**		**Duration**		**Daily uses**	**Occupants[3,4]**		**Gallons per day**
Showerheads		X		X	5 min.	X	1		=	
Showerheads Residential		X		X	8 min.	X	1		=	
Lavatory Faucets Residential		X		X	25 min.	X	3		=	
Kitchen Faucets		X		X	4 min.	X	1		=	
Replacement Aerators		X		X		X			=	
Wash Fountains		X		X		X			=	
Metering Faucets		X		X	.25 min.	X	3		=	
Metering Faucets for Wash Fountains		X		X	.25 min.	X			=	
Gravity tank type Water Closets		X		X	1 flush	X	1 male[1] 3 female		=	
HET [5] High Efficiency Toilet		X	1.28	X	1 flush	X	1 male[1] 3 female		=	
Flushometer Tank Water Closets		X		X	1 flush	X	1 male[1] 3 female		=	
Flushometer Valve Water Closets		X		X	1 flush	X	1 male[1] 3 female		=	
Electromechanical Hydraulic Water Closets		X		X	1 flush	X	1 male[1] 3 female		=	
Blowout Water Closets		X		X	1 flush	X	1 male[1] 3 female		=	
Urinals		X		X	1 flush	X	2 male			
Urinals Zero-Water Consumption		X	0.0	X	1 flush	X	2 male		=	
Proposed water use									=	
(BWU from GW-1) X .80 = Allowable water use										

[1] Except for low-rise residential occupancies the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
[5] Water closet with an effective flush rate of 1.28 gallons or less when tested per ASME A112.19.2 and ASME A112.19.14.

Notation:
Authority – Health and Safety Code Sections 18934.5 and 18938 (b).
Reference – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.